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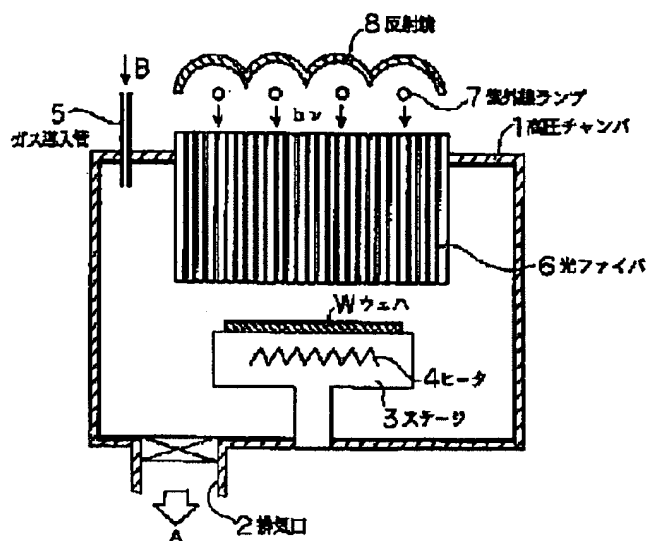
APPLICATION NUMBER : 08287849

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TITLE : METHOD OF REFORMING
HIGH-DIELECTRIC CONST. FILM AND
HEAT-TREATING APPARATUS USING
THE SAME



ABSTRACT : PROBLEM TO BE SOLVED: To bury a metal oxide high-dielectric const. film in holes formed due to oxygen lack and oxidation of C and H atoms, impurity in the film originating from a film forming gas, by a low-temp., little-damage and short-time heat treatment.

SOLUTION: A gas, contg. O_3 at its partial pressure over the atmospheric pressure is introduced into a high-pressure chamber 1, and a wafer W set in a stage 3 is heated by a heater 4, while an ultraviolet ray $h\nu$ is fed into the chamber from an ultraviolet lamp 7 through an optical fiber 6 directed to the end face of the wafer, to optically decompose O_3 near the wafer to create O-type active species. On the wafer W a high-dielectric contg. film is formed as a capacitor insulating film for DRAM. The heating temp. is far lower than the durable temp. of a metal layer electrode of a capacitor. If the treating time is short, the active species can be efficiently penetrated at a high pressure to raise the specific dielectric const. ϵ of the film and lower the leak current.

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